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5251 DTC PARKWAY, SUITE 800  
ENGLEWOOD, COLORADO 80111-2737  
TEL: (303) 796-9700

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June 16, 1992

Mr. Robert Heise  
Work Assignment Manager  
U.S. Environmental Protection Agency  
Region VIII, Mail Code (8HWM-SM)  
999 18th Street, Suite 500  
Denver, Colorado 80202-2405

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**Subject: ARCS VI, VII, and VIII, Contract No. 68-W9-0053, WA# 21-8JZZ  
Site Inspection Prioritization  
Erie Landfill, Weld County, Colorado**

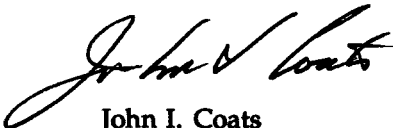
Dear Mr. Heise:

Attached please find a copy of the Final Site Inspection Prioritization Report for the Erie Landfill Site in Weld County, Colorado.

If you have any questions, please do not hesitate to call me at (303) 796-9700.

Very truly yours,

URS CONSULTANTS, INC.



John I. Coats  
Program Manager

cc: Jeff Mashburn/EPA/Region VIII  
Clyde LoSasso/EPA Region VIII  
Pat Smith/EPA/Region VIII  
T.F. Staible/URS/Denver  
Kevin Mackey/URS/Denver  
Kristin Cottle/URS/Denver  
Kathy Weinel/URS/Denver  
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# ARCS

**Remedial Planning Activities  
At Selected Uncontrolled  
Hazardous Substance Disposal Sites  
In The Zone of Regions VI, VII and VIII**

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**Environmental Protection Agency**

**Contract No. 68-W9-0053**

## **SITE INSPECTION PRIORITIZATION**

### **ERIE LANDFILL SITE WELD COUNTY, COLORADO**

**Work Assignment No. 21-8JZZ**

**June 16, 1992**

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Signed,  
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WAM

**SITE INSPECTION PRIORITIZATION**

**Erie Landfill Site  
Weld County, Colorado**

**U.S. EPA Contract No. 68-W9-0053  
Work Assignment No. 21-8JZZ**

**CERCLIS ID #COD980951735**

**Prepared By:  
Kristin S. Cottle**

**URS Consultants, Inc.  
5251 DTC Parkway, Suite 800  
Englewood, CO 80111-2737**

**URS DOCUMENT CONTROL NO. 41881.26.63.A2879**

Approved:   
John I. Coats, Program Manager, URS

Date: 16 June 92

Approved:   
Kevin Mackey, Project Manager, URS

Date: 6/16/92

Approved:   
Pat Smith, Site Assessment Manager, EPA

Date: 6/18/92

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URS Consultants, Inc.  
ARCS, EPA Regions VI, VII and VIII  
Contract No. 68-W9-0053

Erie Landfill/SIP  
Distribution List  
Revision: 0  
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### ENVIRONMENTAL PROTECTION AGENCY

Robert Heise

Work Assignment Manager, ARCS, EPA Region VIII,  
WA #21-8JZZ

Pat Smith  
(4 copies)

Site Assessment Manager, ARCS, EPA Region VIII,  
WA #21-8JZZ

### URS CONSULTANTS, INC.

Kevin Mackey  
Kathy Weinel

Site Manager, ARCS, EPA Region VIII, WA #21-8JZZ  
Quality Assurance Coordinator/Analytical Support Coordinator,  
EPA Region VIII, WA #21-8JZZ  
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**SITE INSPECTION PRIORITIZATION (SIP)**

**Erie Landfill Site  
Weld County, Colorado**

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## **1.0 INTRODUCTION**

URS Consultants, Inc. (URS) has been tasked by the U.S. Environmental Protection Agency (EPA) under the Alternative Remedial Contracts Strategy (ARCS) Contract Number 68-W9-0053 to conduct a Site Inspection Prioritization (SIP) (Work Assignment Number 21-8JZZ) for the Erie Landfill Site (CERCLIS ID #COD980951735). The Site Inspection (SI) was conducted for this site, by the Colorado Department of Health, on March 19, 1991, and was completed on April 18, 1991 (State of Colorado Department of Health (CDH) 1991).

## **2.0 OBJECTIVES**

The purpose of this SIP is to quantify data elements of the Hazard Ranking System (HRS) at the Erie Landfill Site and to provide sufficient documentation for the EPA to determine the environmental contamination in the Erie Landfill Site, thus determining the appropriate future course of action. The results of this SIP, and previous work performed by the Colorado Department of Health, will enable the EPA to determine if the site is likely to score above 28.50 on the HRS and subsequently qualify for eventual listing on the National Priorities List (NPL). Detailed environmental pathway discussions are presented in the Sampling Activities Report, written by the Colorado Department of Health in August 1991, and will not be addressed by this SIP.

The specific objectives of this SIP are to review the International Business Machine of Boulder's (IBM-Boulder) Section 104(e) response to EPA's request for information pursuant to Section 104 of CERCLA for the Erie Landfill Site located in Weld County, Colorado, and to:

- Identify, quantify and characterize IBM-Boulder wastes deposited at the Erie Landfill Site in 1968 and 1969 (IBM-Boulder is an identified Potentially Responsible Party (PRP));
- List of substances which have definitely or potentially been deposited at the Erie Landfill Site by IBM-Boulder and other PRPs;
- Quantify waste using Tier A or B criteria; and
- Identify data gaps for other follow-up PRP Section 104(e) requests which could better quantify waste.

### 3.0 BACKGROUND

#### 3.1 SITE LOCATION

The Erie Landfill Site is composed of 275 acres and is located in Weld County, Colorado, approximately 1 1/4 miles southeast of the town of Erie. The legal description for the Erie Landfill Site is Section 29, Township 1 N, Range 68 W, and the approximate site coordinates are 40° 01' 40" N Latitude and 105° 01' 15" W Longitude. To reach the site from I-25, take the Erie exit west to Weld City Road #5 and proceed south for one mile. The entrance to the site is located at the intersection of Weld County Road #5 and #6.



### 3.2 SITE DESCRIPTION

The Erie Landfill Site is located in the Denver Basin, which extends from Greeley to Colorado Springs, and is bordered on the west by the Rocky Mountains. The site lies on gentle westward sloping topography with a 1-5% gradient. The land use in the area is primarily agricultural. The town of Erie (population 1,258) is located approximately 1 1/4 miles northwest of the site (Figure 2) (U.S. Department of Commerce, Bureau of the Census, 1990). There are an estimated 400 wells located within a four-mile radius of the site, which tap three aquifers the alluvial, shallow Laramie bedrock, and Laramie-Fox Hills aquifers (CDH 1991). The town of Erie obtains drinking water from Erie Lake and Prince Lake No. 2. An estimated 110 town wells tap the alluvial aquifer for landscape watering. The Laramie-Fox Hills aquifer is utilized by residences outside of the town of Erie. The Laramie-Fox Hills aquifer is located approximately 350 to 400 feet below ground surface in the vicinity of the site, and there are an estimated 230 wells within a four-mile radius of the site (CDH 1991). Surface water flows west in three draws through the facility into Coal Creek, which flows into Boulder Creek within 15 miles downstream of the site (Figure 1).

There are three separate landfills at the Erie Landfill Site, which are addressed as one site by this report and by IBM-Boulder in the Section 104(e) response. Henceforth, the term "site" will be used when referring to the entire Erie Landfill Site, and landfill names will be used for specific landfill references. The landfill that accepted both municipal and hazardous waste in the past has been known both as the Erie Landfill and as the Pratt property (Figure 2). The Erie Landfill received waste from approximately 1965 to 1979, and was closed (under the direction of the Colorado Department of Health) and revegetated in 1984. The remaining properties are currently known as Laidlaw South Landfill, which was first operated in 1979, and Laidlaw North Landfill, which opened in 1984 (Figure 2). The Laidlaw South Landfill has also been called the Columbine

Landfill. The Laidlaw South property has intermediate cover on some areas but further municipal landfilling is planned (CDH 1991). The Laidlaw North property is partially closed with full closure plans set for 1993. The entire site is fenced and access is restricted with the exception of the easternmost segment of the Erie Landfill (Figure 2).

### 3.3 SITE HISTORY AND PREVIOUS WORK

There have been various land uses and transfers of ownership of the landfill properties. In 1964 the Pratt family entered into agreement with a Mr. John Neuhauser to fill in the south draw of the Erie Landfill parcel in order to level the area so that it could be eventually farmed. Mr. Neuhauser, along with a Mr. Carl Smith, formed a company called Sanitation Engineering, Inc. This company hauled solid waste from surrounding communities and also accepted industrial and chemical wastes at least in part from IBM-Boulder, "Cheyenne Air Force Base" and Sundstrand Aviation (IBM-Boulder 1991). It is unknown which U.S. Air Force base the term "Cheyenne Air Force Base" actually refers to as there is no listed U.S. Air Force base by this name (U.S. Air Force 1992a and 1992b).

On August 9, 1966, Boulder County personnel noted three pits at Erie Landfill; two were used for the disposition of chemicals, and the third was used for burning chemicals, including propellant. A September 1966 inspection, conducted by the CDH, noted that part of the site was being excavated in order to divert natural drainage around the facility. On July 17, 1968, a Certificate of Designation (CD) (a permit specifying proper operations) was issued to Mr. Neuhauser by the Weld Board of County Commissioners. On July 26, 1968, an uncontrolled chemical fire burned approximately 3,000 gallons of waste chemicals in the southwestern corner of the Erie Landfill. On October 30, 1968, the CD was suspended by Weld County for 33 days,

but was held in abeyance for a six-month probation period. Mr. Neuhauser sold his share of the company to his partner, Mr. Smith, in late 1968 (CDH 1990).

Although information is inconclusive, it is believed that Browning-Ferris Industries (BFI) operated all the Weld County Landfills, including the Erie Landfill, from 1969 to 1974 (CDH 1990). In June 1975 the Colorado Department of Health (CDH) inspected the landfill and noted the presence of oil/water waste. The February and April 1976 inspections indicated that approximately 1,500 gallons per week of oil/water waste were deposited at the base of the landfill. In October 1976, a Mr. Ralph Roweder (a BFI employee) purchased the contract to operate the Weld County Landfills. A February 7, 1978 memorandum from the Dacono Fire Department noted frequent fires at the Erie Landfill requiring from 10,000 to 100,000 gallons of water to extinguish (CDH 1990).

In June 1979, Colorado Landfill, Inc. (CLI) purchased the Erie Landfill. CLI was not interested in operating the old Erie Landfill, thus Weld County Commissioners revoked the Erie Landfill CD on June 6, 1979. During that same month, surface rights to the Columbine Mine No. 1 were sold to CLI, which added an additional 160 acres west-southwest of the original 35-acre Erie Landfill. CLI received a CD from Weld County to operate a sanitary landfill (authorized to accept municipal solid wastes only) on the new 160-acre parcel, which was designated as the Columbine Landfill (CDH 1990). The Columbine Landfill is currently known as the Laidlaw South Landfill (Figure 2).

A November 1981 CDH inspection noted oil, grease and ponded sludge at the northeast end of the site, probably due to the 500 gallons per week of car wash and grease trap wastes that the landfill was accepting. CDH reinspected the site in September 1982 and noted that during a 6-8

week period, 6,000-9,000 gallons per day of sand and grease trap waste sludges were being deposited at the Columbine Landfill. A CDH memorandum dated May 1983 stated that some of the trap wastes contained cyanide, and that exposed trash areas were noted at the Columbine Landfill. A May 1985 inspection noted a black liquid discharge into a pond at the west end of the Columbine Landfill. In December 1985, the Columbine Landfill was purchased by Western Disposal. In January 1988, Laidlaw Waste Systems, Inc. purchased the property, which became known as Laidlaw South (Figure 2). Laidlaw developed and implemented a closure and post-closure maintenance plan for the old 35-acre Erie Landfill parcel (CDH 1990).

Daniel Horst (of Landfill Systems) developed an operations plan for a landfill north of the Columbine Landfill. The 80-acre site, approved for municipal solid waste only, was annexed by the town of Erie on November 8, 1984. The property was sold to a GSX Corporation in August 1986. In November 1986, GSX was purchased by Laidlaw Waste Systems, Inc. and the property became known as Laidlaw North (Figure 2)(CDH 1990).

Two Preliminary Assessments (PAs) and two Site Inspections (SIs) have been performed by the CDH at the site. The 1984 PA stated that approximately 1,500 drums containing 84,000 gallons of solvents, organics, inorganics, acids and bases were deposited in the Erie Landfill, by IBM-Boulder from 1965 to 1969. The SI was performed at the site in June 1984. Several EPA target compounds and tentatively identified compounds (TICs) were detected in groundwater, including 1-butene (130  $\mu\text{g/l}$ ) and oxybismethane (310 and 370  $\mu\text{g/l}$ ). Two shallow monitoring wells (103A and 103B) were drilled on the north side of the Laidlaw North property in December 1984 and in March 1988, respectively. The CDH 1990 PA mentioned "high concentrations" of volatile organics, including 1,1 dichloroethane, methylene chloride, tetrachloroethene, 1,1,1-

trichloroethane, chloroethane, chloroform and trichlorofluoromethane, which were detected in the December 1987 sampling of well 103A (CDH 1990).

CDH conducted the additional PA in November 1990. The groundwater pathway was the major pathway of concern addressed in the 1990 PA. The SI was conducted in two phases in the spring of 1991. Samples were analyzed for VOA, BNA, pesticides/PCBs and inorganics. Observed releases of benzene, 1-1 dichloroethane, dichlorofluoromethane, tetrahydrofuran and 2-fluoro-4-nitrophenol were detected in on-site monitoring wells. Higher concentrations of inorganic compounds were also detected in these wells, indicating degrading water quality compared to background monitoring wells. No observed releases were detected in domestic wells associated with the Laramie-Fox Hills Aquifer (CDH 1991).

IBM-Boulder contracted Dames and Moore in 1980 to assess the Erie Landfill, and again in 1990 to address the geohydrologic and water-quality conditions in the vicinity of the landfills. EPA sent a Section 104(e) request to IBM-Boulder in October 1991, requesting documentation of IBM-Boulder's disposal practices at the landfill complex. The waste characteristics section of this report addresses IBM-Boulder's November 1991 response (IBM-Boulder 1991).

### **3.4 SITE GEOLOGY**

A detailed description of the site geology, hydrogeology and hydrology is provided in the Preliminary Assessment for the Columbine (Erie) Landfill, written by the Colorado Department of Health in 1990 (CDH 1990).

The site is on the northwestern flank of the Denver Basin. The soils on-site are comprised of calcareous silt, with some clay and very fine sands. The soil deposits were formed by wind and stream disposition and by weathering of the bedrock. The soil thickness ranges from approximately 2 to 21 feet due to irregular bedrock and land surfaces. Thus, the depth to bedrock also varies from 2 to 21 feet on site. The irregular bedrock surface somewhat parallels the surface topography (CDH 1990).

The Laramie Formation, which forms the bedrock under the site, is divided into upper and lower lithologic units. The upper unit is comprised of organic claystone with interbedded sands and the lower unit consists of fine-grained, moderate to well-cemented sandstone which grades to carbonaceous claystone. The sandstones occur at depths of 400 to 450 feet below ground surface and comprise the upper part of the Laramie-Fox Hills Aquifer (CDH 1990).

The coals of the Laramie Formation have been extensively mined in the area, as noted by the presence of the Columbine Mine No. 1 which underlies the Laidlaw South Landfill parcel (Figure 2). Overburden thickness above the mine ranges from 150 to 400 feet with the probable extracted coal seam thickness ranging from 0 to 15 feet. The mine was operated by the room and pillar extraction method. After the coal seams were exhausted, the pillars were typically removed. The area has never been evaluated to determine past or future mining potential (CDH 1991).

The Fox Hills Sandstone is beneath the Laramie Formation. The upper unit (Milliken Sandstone) is composed of fine to medium-grained, parallel, thick-bedded sandstone, thin siltstone and shale interbeds. The unit ranges in thickness from 40 to 90 feet. The Milliken Sandstone and the overlying lower sandstone unit of the Laramie Formation comprise the Laramie-Fox Hills

**Aquifer.** Pierre Shale beneath the Fox Hills Sandstone, consists of a 7,000- to 8,000-foot thick sequence of gray to brown, clayey marine shales (CDH 1990).

The site lies in a structurally complex area. Bedrock has been highly distorted through both folding and faulting, with faults that generally align in a northeasterly direction. Regionally, the bedrock dips one degree to the southeast (CDH 1990).

### **3.5 SITE HYDROGEOLOGY**

The direction of regional groundwater flow in the Laramie-Fox Hills Aquifer is to the east-southeast. Groundwater is generally produced from the sandstone units at depths of 400 to 450 feet below ground surface. Exploratory drilling programs have identified two shallow groundwater systems at the site. The shallowest groundwater system is associated with the alluvial and colluvial soil materials in the topographic drainages. Recharge to the alluvial groundwater system occurs by direct infiltration of snowmelt and rainfall from topographically elevated areas. The saturated thickness of the shallow system is generally less than 5 feet and is perched at approximately 10 to 20 feet below the ground surface at the bedrock interface (CDH 1990).

The deep groundwater system found at the site is located within a saturated bedrock unit consisting of siltstone, sandstone and coal units. The depth to saturated bedrock ranges from 21 to greater than 82 feet below ground surface. Bedrock immediately above and below the saturated unit is dry. Because of the large difference in the potentiometric elevation between the local shallow bedrock groundwater systems and the regional Laramie-Fox Hills Aquifer, the low hydraulic conductivity of the upper Laramie Formation claystones, and the unsaturated

bedrock beneath the deep perched system, it has been concluded that the perched and regional groundwater systems are not hydraulically connected (CDH 1990).

### 3.6 SITE HYDROLOGY

The site lies on westward sloping topography with a 1-5% gradient. Locally, flat areas, between the draws, are often farmed. Drainages are oriented east-west and generally flow into Clear Creek within one-half mile to the west. There are three unnamed drainages, with an east-west trend, which are located in the vicinity of the site. The drainage that bisects Laidlaw North Landfill (Figure 2, Section 20), is referred to as the north draw. The drainage that bisects the Laidlaw South and Erie Landfill (Figure 2, Section 29) is referred to as the middle draw, and the drainage to the south of the site is referred to as the south draw (Figure 2, Section 29) (CDH 1990).

The middle and south draw are well-developed and join together in (Figure 2, Section 30). At that confluence, the draws are bermed and water ponds behind it. Downgradient from the berm, the stream bed is dry and there is no discharge to Coal Creek. The south draw has four additional berms (Figure 2, Section 29). Behind each berm, water is ponded and subsequently, that water supports wetland vegetation. The north draw is not bermed and it is generally dry except during storm events (CDH 1990).

Coal Creek is the only perennial stream located within two miles of the site (Figure 1). Surface water conditions are routinely monitored by Laidlaw Waste Systems, Inc. EPA priority pollutants have not been detected in samples and on average, water quality is equivalent at the



upstream and downstream monitoring stations. There is no indication of degraded surface water quality in Coal Creek from the landfill operation (CDH 1990).

### **3.7 SITE METEOROLOGY**

The site receives moderate amounts of precipitation. The average annual precipitation is 16 inches per year while the mean annual lake evaporation is 38 inches per year, yielding a net precipitation value of negative 22 inches per year (U.S. Department of Commerce 1968). The corresponding HRS net precipitation factor value is one (Office of the Federal Register 1990). Additionally, the 2-year, 24-hour rainfall event for the site is two inches (Dunne and Leopold 1978).

## **4.0 SITE WASTE QUANTITY AND CHARACTERISTICS**

### **4.1 IBM-BOULDER WASTE**

IBM-Boulder first generated chemical waste in 1966. From October 7, 1966, to March 18, 1968, IBM-Boulder had a contract with Denver Clean-Up Service to haul chemical process wastes to a landfill in the Denver area. During the same period of time, Sanitation Engineering, Inc. hauled non-hazardous office trash to the Erie Landfill. On May 7, 1968, Sanitation Engineering, Inc. began disposing both IBM-Boulder trash and chemical waste in the Erie Landfill. Due to poor waste handling practices by Sanitation Engineering, Inc., IBM-Boulder terminated their contract in May 1969. IBM-Boulder then used local dumps to dispose of site trash and hired Conservation Chemical Company of Kansas City to haul and dispose of all site chemical waste.

The total volume of waste organics, inorganics, solvents, acids and bases disposed of at the Erie Landfill by IBM-Boulder from May 7, 1968 to May 1969 was reported by IBM-Boulder to be 88,520 gallons (IBM-Boulder 1991). Most of the waste was contained in 55-gallon drums and one- to five-gallon fireproof safety cans. Table 1, which follows, summarizes the composition of IBM-Boulder waste sent to the Erie Landfill, based on information provided by IBM-Boulder in the Section 104(e) response (IBM-Boulder 1991).

**Table 1**  
**Composition and Quantity of IBM-Boulder Buried Wastes**  
**May 1968 - May 1969**

TYPE	WASTE	GALLONS BURIED
<b>MIXED SOLVENTS</b>		
Composed of:	Cyclohexanone	27,000
	Toluene	21,500
	Methyl ethyl ketone	3,000
<b>SLUDGE</b>		
Approximately 75% composed of:	Ferric oxide	
	Ferrous oxide	
	Conductex SC (carbon black)	
Approximately 25% composed of:	Hycar 1432 (acrylonitrile rubber)	
	Epon 834 (epichlorohydrin/bisphenol)	
	Mondur CB-75 (polyisocyanate in ethyl acetate solution)	
	VAGH-1 (91% vinyl chloride, 6% vinyl alcohol, 3% vinyl acetate)	
	Duomeen TDO (N-tallow-trimethylene diamine dioleate)	
	Robane (squalane)	
	Freon TF (trichlorotrifluoroethane)	
	Multron R-16 (polyester resin)	
	Isopropyl alcohol	
	<b>SLUDGE TOTAL</b>	<b>18,000</b>
<b>OTHER</b>		
	Trichloroethane (including Chloroethene)	4,000
	Epoxy	4,000

**Table 1**  
**(Continued)**  
**Composition and Quantity of IBM-Boulder Buried Wastes**  
**May 1968 - May 1969**

TYPE	WASTE	GALLONS BURIED
	Methylene chloride (contained in Lonco Sonic Solve No. 115 and M-17 solvent)	2,000
	Alcohols (primarily isopropyl alcohol and small quantities of ethyl, methyl, and propyl alcohols)	1,900
	Ferric chloride	1,700
	Sulfuric acid (Enplate Conditioner 470 and battery acid)	400
	Ammonium persulfate	250
	Cellosolve acetate (contained in AZ-111 Photo Resist)	100
	Trichloroethylene (contained in M-17 solvent)	75
	Tetrahydrofuran (contained in M-17 solvent)	75
	Nitric acid	50
	Sodium chloride	50
	Ethyl acetate (contained in Jaysol solvent)	10
	Methyl isobutyl ketone (contained in Jaysol solvent)	10
	Plating solution and Heat Treat waste composed of cyanide, chromic, oxides, copper, caustics, barium and nitrate salts	4,400
	<b>IBM-BOULDER TOTAL</b>	<b>88,520</b>

#### **4.2 OTHER WASTE**

Other potentially hazardous substances which have been sent to the site are included in Table 2, which follows. The list of substances were compiled from the CDH 1991 Sampling Activities Report and from the information included with the IBM-Boulder Section 104(e) submittal (CDH 1991 and IBM-Boulder 1991). As stated previously, waste was deposited in the Erie Landfill from the mid 1960s to 1979, at which time the Columbine (currently Laidlaw South) Landfill opened. All waste listed, which was deposited after 1980, was pre-approved by the Colorado Department of Health and/or Weld County as well as the landfill operator (IBM-Boulder 1991).

**Table 2**  
**Other Potentially Hazardous Substances**  
**Deposited at the Erie Landfill Site**

SOURCE	WASTE	AMOUNT	YEAR	LANDFILL
"Cheyenne Air Force Base"	unknown	unknown	late 1960s	Erie
Sundstrand Aviation	Torpedo propellant	unknown	late 1960s	Erie
unknown	Protex (55-gal. drums)	unknown	1968-1969	Erie
unknown	Oil/water waste	1,500 g/wk (TVU)	1976	Erie
Shattuck Chemical (S.W. Shattuck Chemical Co., Inc.)	Soil contaminated with spent petroleum catalysts & heavy metals	32 truck loads (TVU)	1980	South
unknown	Car wash and grease trap waste	500 g/wk (TVU)	1981	South
unknown	Sand and grease trap sludges (1% solids) - cyanide-contaminated	6,000-9,000 g/d for 6-8 wks.	1982	South
Berthoud Fire Department	Soil contaminated with methanol and methylene chloride	"small" (TVU)	1983	South
Analytical Development Corporation	Pineapple green chop tops (contaminated with pesticides)	3,600 lbs.	1983	South
Continental Pipeline Company (CPL)	CPL jet fuel filters (below RCRA limits for leachate metals)	unknown	1983	South
unknown	Asbestos	900 bags/mt (TVU)	1983-1985	South
unknown (private citizen)	DDT (overpacked in 5-gal. can)	1 gal.	1984	South
unknown	Gas-contaminated soil and pads	20-30 gal.	1984	South
unknown	Mercury (Hg)-contaminated materials	1/2 - 1 tsp. (Hg)	1984	South
Lakeside & Southglen Malls	Asbestos	45 cu. yds.	1987	South

Erie=Erie Landfill  
g/w=gallons per week  
lbs.=pounds  
cu. yds.=cubic yards  
ppm=parts per million

South=Laidlaw South Landfill  
g/d=gallon per day  
bags/mt=bags per month  
yds/d=yards per day  
TVU=total volume unknown

gal.=gallon(s)  
wks.=weeks  
tsp.=teaspoon  
con.=concentration

**Table 2**  
**(Continued)**  
**Other Potentially Hazardous Substances**  
**Deposited at the Erie Landfill Site**

SOURCE	WASTE	AMOUNT	YEAR	LANDFILL
unknown	Flyash	865 cu. yds/d (TVU)	1987	South
Rothman Oil Company	Petroleum-contaminated soil (low con. of heavy metals)	350 cu. yds.	1987	South
AT&T	Gas & diesel-contaminated soil (average con. 100 ppm)	250 cu. yds.	1988	South
Laidlaw (Adams County facility)	Petroleum-contaminated soil	"large" (TVU)	1988	South
Gilpin School (Denver Public Schools)	Primatol-contaminated soil (<1ppm con. of Primatol)	500 cu. yds.	1988	South
Johnson Publishing Company	Empty 55-gal. drums contaminated with lithographic printing ink	unknown	1988	South
Custom Pumping Company	Solidified trap sludge & cement kiln dust	unknown	1989	South
IBM-Boulder	Toner barrels	unknown	1989	South
AT&T	Condensation Reflow Solder Machine with residual 3M Flourinert (non-hazardous)	unknown	1989	South
unknown	Asbestos	40 cu. yds.	1989	South
City of Broomfield	Wastewater grit	unknown	1989	South
George Oil Company	Petroleum-contaminated soil	"large"	1990	South
City of Longmont	Petroleum-contaminated soil	"large"	1990	South
HW Moore Equipment Co.	Petroleum-contaminated soil	8,000 cu. yds.	1990	South

Erie=Erie Landfill  
g/w=gallons per week  
lbs.=pounds  
cu. yds.=cubic yards  
ppm=parts per million

South=Laidlaw South Landfill  
g/d=gallon per day  
bags/mt=bags per month  
yds/d=yards per day  
TVU=total volume unknown

gal.=gallon(s)  
wks.=weeks  
tsp.=teaspoon  
con.=concentration

#### 4.3 DATA GAPS

The IBM-Boulder Section 104(e) response summarized in Table 1, identified the Tier A, hazardous constituent quantities of wastes deposited by IBM-Boulder at the Erie Landfill, totaling 88,520 gallons. Due to poor record keeping in the 1960s and 1970s, the complete nature, quantity and composition of hazardous wastes deposited by parties other than IBM-Boulder at the Erie Landfill is unknown. Table 4.2.1 lists Potentially Responsible Parties (PRPs) and most importantly, generators responsible for depositing waste at the site pre-1980, at which time waste was approved by the Colorado Department of Health and/or Weld County. Supplementary sources of information might include "Cheyenne Air Force Base" (if the specific base could be determined) and Sundstrand Aviation as additional generators responsible for depositing waste at the Erie Landfill in the late 1960s. Information received from Section 104(e) requests directed to "Cheyenne Air Force Base" and Sundstrand Aviation may help to further characterize the Tier A waste specifications of the site.



## 5.0 SUMMARY

In the late 1960s, the Erie Landfill accepted hazardous waste. During a one-year period of time, IBM-Boulder generated 88,520 gallons of waste, which was deposited at the Erie Landfill. During the same period of time it is documented that "Cheyenne Air Force Base" and Sundstrand Aviation also shipped waste to the Erie Landfill. After 1980, a variety of non-municipal wastes was accepted by the Columbine Landfill, currently known as Laidlaw South. Wastes such as asbestos and petroleum-contaminated soil were approved by the Colorado Department of Health and/or Weld County and deposited at the Columbine Landfill, after 1980. Waste quantity and composition information is not complete, and follow-up Section 104(e) requests to additional PRPs could provide further information needed for HRS specifics.

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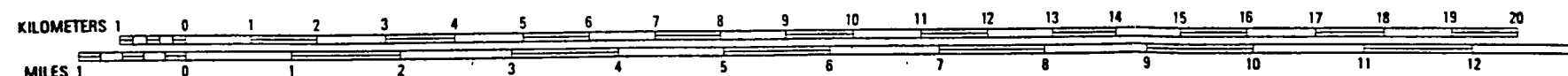
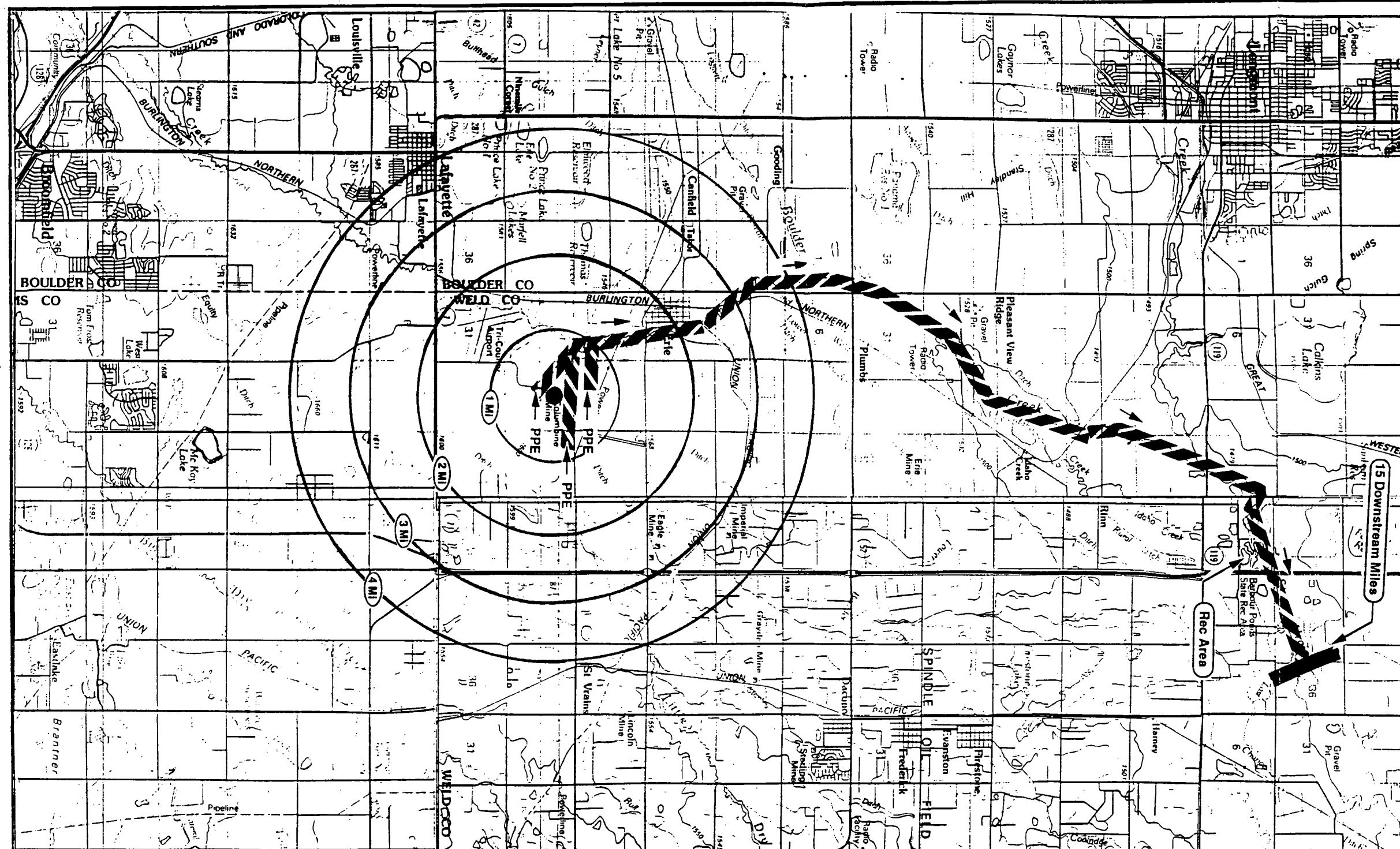
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**7.0 FIGURES**

Figure 1, Radius of Influence Map, and Figure 2, Site Map, are found on the following pages.

FIGURE 1



LEGEND

- - Site Location
- PPE - Probable Point of Entry
- - Direction of Flow
- - Stream

Source: USGS Topographic Maps - Denver East, Colorado, 1981  
Greeley, Colorado, 1982  
Denver West, Colorado, 1983  
Estes Park Colorado, 1984

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**Erie Landfill Site  
Weld County, Colorado**

**Radius of Influence Map  
Figure 1**

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FIGURE 2

